

REMARKS

In accordance with the foregoing, claims 1-3, 5-7, 8-10 and 12-16 are amended. Claims 17 and 18 are added. No new matter is added. Claims 1-18 are pending and under consideration.

The claims are amended herewith only for enhancing form and clarity.

The Examiner failed to acknowledge withdrawal of the prior Office Action. Applicants consider that the Office Action mailed July 11, 2007 supersedes the Office Action mailed March 6, 2007, and respectfully request their position to be held in abeyance.

The pendency and rejection of claims 17 and 18 is not reflected in the Office Action Summary.

INTERVIEW

Applicants wish to thank the Examiner for the courtesy of an interview granted to Applicant's representative on October 4, 2007, at which time the outstanding issues in this case were discussed. Arguments similar to the ones developed hereinafter were presented and the Examiner indicated that in light of the arguments, the prior art does not anticipate or render obvious at least some of the recitations in the claims. Therefore, the claims appear to be allowable and the Examiner would reconsider the outstanding grounds for rejection upon formal submission of this response to the outstanding Office Action.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

Claims 1-4 and 8-11 are rejected under 35 U.S. C. §103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 2004/0005092 to Tomasi (hereinafter "Tomasi") in view of U.S. Patent Application Publication No. 2002/0097906 to Ishiyama ("Ishiyama").

Independent claim 1 patentably distinguishes over the cited prior art at least because Tomasi and Ishiyama, alone or in combination, fail to teach or suggest:

- a unit determining a **straight line** which passes through a measuring point on the object and a specific point on said camera from the image of the object captured by said camera; and
- a unit **determining a three-dimensional position of said measuring point from the straight line** determined by said unit determining a straight line and the surface

determined by said unit determining the surface (emphasis ours relative to the recitations that Tomasi and Ishiyama alone or in combination do not disclose or render obvious).

The Office Action alleges that FIG. 9 of Ishiyama is relevant to the recited unit for determining a straight line. During the interview of October 4, 2007, Applicants' representative explained that the correspondence between a three-dimensional subject and a two-dimensional image as illustrated in Ishiyama's figure and the bare statement that a person of ordinary skill in the art "would desire to determine a straight line" (see page 5 of the outstanding Office Action) do not correspond the recited straight line exemplarily illustrated as line 8 between points Q and S in FIG. 4 of the specification. The Examiner submitted that this argument is valid.

Since Tomasi and Ishiyama do not teach or suggest determining the straight line, these prior art references cannot teach either determining a three-dimensional position of said measuring point using the straight line.

Independent claim 2 patentably distinguishes over the cited prior art at least by reciting:

- said two-dimensional information acquiring unit determines a position of a measuring point of said object on a two-dimensional image including said object captured by a camera, **compares a reference image including a characteristic area of the object with an image of said characteristic area in said two-dimensional image and determines parameter values that describe a transformation expressing geometrical deformation with respect to said reference image** provided by mapping using said camera,
- three-dimensional information acquiring unit **receives a reflected light of a light projected by projecting unit onto said object by unit of light receiving unit to acquire three-dimensional information on an inclination of a surface on which said measuring point of said object exists and/or a distance from said camera to the surface**; and
- said information combining unit combines information acquired by said two-dimensional information acquiring unit and **information acquired by said three-dimensional information acquiring unit based on calibration information of said camera** and generates new three-dimensional information (emphasis ours relative to the recitations that Tomasi and Ishiyama alone or in combination do not disclose or render obvious).

During the interview of October 4, 2007, Applicants' representative explained that FIG. 9 of Ishiyama, paragraphs 122-123 and equation 5 therein (which were cited as relevant in the outstanding Office Action) do not indeed render obvious "[comparing] a reference image including a characteristic area of the object with an image of said characteristic area in said two-dimensional image and [determining] parameter values that describe a transformation expressing geometrical deformation with respect to said reference image provided by mapping using said camera" as recited in claim 2. The Examiner recognized that Applicants' argument is valid.

Claims 3-8, 15 and 16 depending from claim 2 are also patentable by inheriting patentable recitations from claim 2.

Claim 9 patentably distinguishes from the cited prior art at least by reciting:

- a two-dimensional information acquiring unit that determines a position of a measuring point of said object on a two-dimensional image including said object captured by a camera, **compares a reference image including a characteristic area of said object with an image of said characteristic area in said two-dimensional image, and determines parameter values that describe a transformation expressing geometrical deformation with respect to said reference image provided by mapping using said camera;**
- a three-dimensional information acquiring unit **that receives a reflected light of a light projected by projecting unit onto said object, by unit of light receiving unit, to acquire three-dimensional information on an inclination of a first surface which has a certain positional relationship with said measuring point on said object and/or a distance from said camera to the surface;**
- an information combining unit that combines information acquired by said two-dimensional information acquiring unit and the three-dimensional information acquired by said three-dimensional information acquiring unit **based on calibration information of said camera,** and generates new three-dimensional information;
- **a unit for determining a straight line in a three-dimensional space which passes through the measuring point on said object and a specific point on said camera;**
- **a unit for determining, from the information on said first surface, information**

on a virtual second surface which has a certain positional relationship with said first surface and passes through the measuring point on said object; and

- **a unit for determining an intersection between said straight line and said second surface** (emphasis ours relative to the recitations that Tomasi and Ishiyama alone or in combination do not disclose or render obvious).

Claims 10-14, 17 and 18 are also patentable at least by inheriting patentable recitations from claim 9.

Claims 5-7 and 12-14 are rejected under 35 U.S. C. §103(a) as allegedly being unpatentable over Tomasi and Ishiyama in further view of U.S. Patent No. 5,129,010 to Higuchi ("Higuchi").

Higuchi does not correct or compensate the above-identified failure of Tomasi and Ishiyama in disclosing or rendering obvious all the recitations of independent claim 2. Therefore, claims 5-7 are patentable over the cited prior art.

Claims 15-18 are rejected under 35 U.S. C. §103(a) as allegedly being unpatentable over Tomasi and Ishiyama in further view of U.S. Patent No. 6,137,902 to Kinoshita ("Kinoshita").

Higuchi and Kinoshita do not correct or compensate the above-identified failure of Tomasi and Ishiyama in disclosing or rendering obvious all the recitations of independent claim 9. Therefore, claims 12-18 are also patentable over the cited prior art.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

Serial No. 10/689,721

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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